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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/554,005

Applicant(s)

BOCHAVER, KIRILL ZYSKOVICH

Examiner

PREM C. SINGH

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2008.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2-4 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 2-4 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-946)
3) ☐ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

The Specifications (page 6) refer to figures 1 and 2, but the examiner could not locate the drawings.

Appropriate correction is required.

Response to Amendment

2. Amendment to claims 2 and 3, cancellation of claim 1, and addition of new claim 4 is noted.
3. New ground of rejection necessitated by addition of new claim 4 follows.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 (page 3, line 2) cites, -- "the pseudo-fluidized bed of the solvent"--. Use of "the" renders the claim indefinite.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 2-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Letechin (WO 02/14412 A1).

8. With respect to claims 2-4, Letechin discloses a method for recycling organic polymer waste including rubber and thermal liquefaction of wastes at a temperature of at least 270°C at increased pressure (up to 6.1 MPa) in at least one solvent, i.e., alkyl

benzene; separation of the liquid fraction and its distillation characterized in that in the course of thermal liquefaction of the waste an increased pressure is applied while after the distillation a part of the liquid fraction whose boiling point is at about 210°C, is introduced during the thermal liquefaction of a new batch to be processed, an additional component is added to the solvent at a mass ratio of at least 1:1 (See page 11, claim 1, lines 3-12). Letechin further discloses that the mass ratio of solvent to waste is selected within the range from 1:1 to 4.2:1 (See page 11, claim 2, lines 13-15).

Letchin does not specifically disclose catalytic reforming of a part of the liquid fraction boiling below 220°C.

It is to be noted that the liquid boiling below 210°C comprises light naphtha. It is also to be noted that Letchin uses only a part of the liquid boiling below 210°C as the solvent in the next batch of thermal liquefaction. Thus, the remaining part of liquid boiling below 210°C (i.e., light naphtha) must be used elsewhere. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify Letchin invention and use the fraction boiling below 210°C elsewhere, for example, in a catalytic reforming unit and making the fraction highly suitable for upgrading to a valuable gasoline product (evidenced by Wright, US Patent 4,569,749: column 2, lines 7-13).

Letchin invention does not specifically disclose pseudo-fluidized bed of the solvent, however, the invention does disclose using similar solvent under similar operating conditions (pressure and temperature) as claimed by the Applicant in any suitable reactor. Thus, in Letchin invention also the solvent should necessarily be

under pseudo critical conditions. Therefore, it would have been obvious to one skilled in the art at the time of invention to use a pseudo-critical fluidized bed of the solvent for an effective thermal liquefaction process. It is to be noted that the apparatus limitations are not expected to affect the patentability of a process.

Response to Arguments

9. Applicant's arguments filed 10/29/2008 have been fully considered but they are not persuasive.

10. The Applicant argues,

"Processing according to the known method is carried out under pressure of at least 6.1 MPa, and the applied method is carried out under pressure of up to 6.1 MPa that points to unobviousness of the claimed method. In the known method Letechin teaches usage of the liquid fraction (after distillation) with a boiling point not lower than 210°C as a solvent at thermal fluidifying, i.e. mainly with a temperature higher than 210°C. Meanwhile in the claimed method the fraction obtained after catalytic reforming with the boiling temperature below 220°C is used as a solvent. Therefore, in the known and applied methods different possible change of temperature has place - upwards or downwards. This fact evidences unobviousness of the claimed method. In this claimed method only a part of fraction is used as a solvent, the other part is one of the target products. An essential difference of the claimed method is also that Letechin's publication shows usage of the fraction with a boiling point not lower than 210°C as an additional component of the main solvent, which is alkyl benzene; and in the claimed method a part of the liquid fraction, as subjected to catalytic reforming, with the boiling temperature below 220°C is used as sole (main) solvent at recycling (thermal liquefaction and thermolysis) of a new batch of wastes.

Moreover, according to the claimed method alkyl benzene and/or the gasoline fraction having a boiling temperature below 220° is used only at the start-up of the process of wastes recycling (at the start-up of the reactor)".

The Applicant's argument is not persuasive because the claims require a boiling temperature below 220°C and Letechin teaches a boiling temperature of about 210°C (See claim 1) which reads on the Applicant's claims. Claimed invention does not require, "alkyl benzene and/or the gasoline fraction having a boiling temperature below 220° being used only at the start-up of the process of wastes recycling (at the start-up of the reactor)".

11. The Applicant argues,

"A main difference of the claimed method from Letechin's publication and all the documents cited by the Examiner is that the process of exactly thermal liquefaction and thermolysis of milled wastes (rubber crumb) is carried out in the PSEUDO-FLUIDIZED bed of the solvent FOR THE FIRST TIME. This characteristic feature directly points to unobviousness of the claimed method. The cited patents US 4569749 and US 5389691 do not refer to processes of rubber-containing wastes recycling but teach only the possibility of usage of different distillate liquid fractions, formed while fuels recycling, as return heat-carriers but not return solvents participating in a chemical reaction. In the applicant's opinion basing on the aforesaid the claimed method of rubber-containing wastes recycling in connection with non-obvious but successfully found conditions of recycling, ingenious sequence of operations led to non-obvious result: increase of recycling efficiency, process economy raise (energy demands reduction), and increase of final products' quality. Taking all the aforesaid into consideration the applicants ask the Examiner to consider the above arguments and grant the patent for the application".

The Applicant's argument is not persuasive because as discussed above in the Office action, Letechin uses similar solvent(s) under similar operating conditions of temperature and pressure as claimed by the Applicant. Therefore, Letechin's solvent should also be under pseudo-critical state as claimed by the Applicant. Letechin also discloses use of polymeric wastes including rubber. US Patent 4,569,749 (Wright) has been used only as evidence that one skilled in the art would use the naphtha fraction obtained in Letechin invention as a feed in a catalytic reforming unit to produce high octane gasoline. US Patent 5,389,691 is not a part of rejection.

In conclusion, the claimed invention is *prima facie* obvious over Letechin evidenced by Wright.

Conclusion

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PREM C. SINGH whose telephone number is (571)272-6381. The examiner can normally be reached on 7:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PS 121208

/Glenn A Caldarola/
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